DRAFT – PRELIMINARY ALTERNATIVE MEMO FORMAT

February/March __, 2014

To: Randy Fiorini, Chair, Delta Stewardship Council
Charles Bonham, Director, California Department of Fish and Wildlife

From: The Delta Independent Science Board

Re: Comments on the Bay-Delta Conservation Plan Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS)

The Delta Reform Act of 2009 (§85320(c)) instructs the Delta Independent Science Board to review the Bay Delta Conservation Plan (BDCP) Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and submit its comments to the Delta Stewardship Council and the California Department of Fish and Game. To meet this responsibility, we have [describe our general approach]. Our review focused on the science in the EIR/EIS: how well are statements and conclusions supported by current science; how is science to be applied to proposed actions; and how effectively is the science communicated? To understand the content of the EIR/EIS, we often found it necessary to extended our review to include chapters and appendices in the BDCP Plan. We reviewed files posted on December 9, 2013, at http://baydeltaconservationplan.com/PublicReview.aspx.

Our response is organized into three parts:

- A summary of our major concerns (below).
- Our responses to the "Charge to Delta ISB for Review of the Draft BDCP EIR/S" from the Delta Stewardship Council (Appendix A).
- Individual reviews of EIR/EIS chapters 1-16, 22, 23, and 25-31 (Appendix B).

Major concerns [note: the following are only placeholders; each should be developed a bit more, perhaps with an example or two and references to where they show up in the chapter reviews; the text that has already been written for the "major points" could also be revised and incorporated as appropriate. Each entry should be <1 page long, ideally ½ page. We should also consider whether the main concerns should be accompanied by recommendations.]

1. *Unrealistic optimism*—Throughout the EIR/EIS it is assumed that the Conservation Measures, Avoidance and Minimization Measures, and Mitigation Measures will all be completely effective in producing the anticipated benefits when they are required.

2. *Restoration effectiveness* —There is an expectation that the gains in habitat from restoration and protection that are needed to offset the habitat losses due to BDCP actions will be fully realized. Experience suggests that this is rarely the case.

3. *Resiliency and adaptation*—The EIR/EIS proposes that by providing flexibility in operating water flows and additional habitat through restoration and protection, BDCP will enhance the resiliency and adaptability of Delta species and ecosystems to the effects of climate change and sea-level rise. These are presumed benefits; neither the EIR/EIS nor the BDCP Plan provides a scientific argument to support this proposition or indicates the degree to which the effects might be ameliorated.

4. *Time lags*— Construction and flow operations may have impacts immediately, whereas restoration impacts and benefits may lag a decade or more after construction. The scientific literature strongly suggests, however, that there are usually significant time lags between construction of a new habitat and its full functionality. This means that the benefits of habitat restoration may not occur for a long time and the benefits may be too late for some species. These time lags are not fully considered in the EIR/EIS; when they are, the expectations seem unrealistically optimistic.

5. *Linkages*—Because the Delta is a complex, interacting system, what is done in one place or for one species will affect dynamics elsewhere for other species. A slippage or failure in meeting the expectations of conservation actions will have cascading effects. Much of the EIR/EIS, however, is focused on individual species, particular places, or certain actions that are considered separately from other species, places, or actions. The EIR/EIS fails to treat the Delta as a fully functioning and integrated ecosystem.

6. *Climate change and sea-level rise*—Although the BDCP Plan and EIR/EIS do a good job of describing how climate change and sea-level rise might influence communities and species, the potential effects on the effectiveness of the Conservation Measures are not adequately considered. There is an underlying assumption that the Conservation Measures, if implemented, will have the desired or stated benefits or mitigation effectiveness. Because of the changing conditions, however, the BDCP actions may not develop as anticipated.

7. *Levees*— Although levees are central to the ecological integrity of and water operations in the Delta, the EIR/EIS does not provide an assessment of how levee failures unrelated to BDCP actions would affect water operations under the various action and non-action alternatives, or how the alternatives compare in their likely effects on levee maintenance.

8. *Uncertainties*—Because the Delta is a complex system and BDCP is a complex plan, uncertainties abound. There are uncertainties associated with virtually every action and response discussed in the EIR/EIS. There are uncertainties, for example, in the designations of habitats for species, in projections of entrainment, in the effects of climate change and sea-level rise, in the effectiveness of habitat restoration, and in each of the models used in various analyses. When any of these are combined, the uncertainties compound and propagate. Although the BDCP Plan acknowledges some of these uncertainties, they receive little attention or are ignored in the EIR/EIS. For example, the analysis of changes in hydrodynamics with new intakes and habitat restoration are central to evaluation of the effects on fishes. Yet the hydrodynamic analysis is based on one possible configuration of habitat restoration, and if that is not the configuration, the results of the hydrodynamic analysis could change. Furthermore, if proposed habitat restoration actions are not implemented or are not as effective as assumed in the EIR/EIS, then the positive impacts of those actions would no longer be present, and the final assessment of a net positive or no net negative effect would not be valid. The attendant uncertainties are not described or evaluated.

9. *Assumptions*—Understanding the underlying assumptions is critical to the evaluation of any scientific proposition or model. Although assumptions are sometimes stated (more often in the BDCP Plan than in the EIR/EIS), they are noticeably absent from many of the statements regarding the effectiveness or presumed benefits of BDCP Conservation Measures or mitigation actions. This absence weakens the scientific foundation of the EIS/EIR.

10. *Adaptive management*—Adaptive management is mentioned frequently in the EIR/EIS, but with no details about how it might be implemented; rather, it is often presented as a panacea for all problems. Although adaptive management is well described in the BDCP Plan, the details of implementation have been left to an Adaptive Management Team that has not as yet been established. It is unclear, therefore, how adaptive management will be integrated into the overall implementation of BDCP, and whether the skills necessary to implement adaptive management will be present in the Implementation Office and on the Adaptive Management Team. Adaptive management is not addressed in any substantive way in the EIR/EIS, which increases our misgivings about how well this process will function as a key component of BDCP.

11. *Performance measures*—The BDCP Plan contains a detailed listing of performance measures that are linked to the Biological Goals and Objectives. The EIR/EIS, however, makes only passing and non-specific references to performance measures. This diminishes the scientific credibility of the document and lends additional credence to our concerns about the implementation of adaptive management; without quantitative

measures of performance (ideally based on results and outcomes rather than whether or not actions were taken as planned), implementation of adaptive management becomes problematic.

12. *Contingency plans*—It is unlikely that all the actions and measures in BDCP will play out as planned. Beyond calling for adaptive management, there is little indication of any back-up plans if habitat restoration or other actions fall short of expectations. Given the complexity and the high stakes of many of the actions to be undertaken in BDCP, it would seem prudent to have contingency plans at least generally outlined *before* discovering that things aren't working.

13. *Geographic scope*— Three geographic regions are considered: upstream of Delta, Delta, and SWP and CVP service areas. Areas downstream of the Delta (i.e., San Francisco Bay) are not included even though the NRC scientific review specifically stated that this area should be included. Adequate justification for lack of consideration of impacts to San Francisco Bay is not provided, although there are potential impacts. For example, the expected reduction in sediment supply has the potential for impacts: 1) tidal marshes in the Bay could be less able to keep up with sea level rise, and 2) increased water clarity in the Bay could render it more responsive to nutrient inputs.

14. *Incomplete or missing information*—The EIR/EIS is inconsistent in the level of detail provided to support assertions or conclusions. In some instances [e.g., liquification?] the arguments are based on old data or analyses; in other instances some statements are simply wrong [e.g., mosquitoes?]. Despite the magnitude of the analysis underlying the BDCP documents (and their size), many details about critical elements are not specified and are dependent on further research. For example, operational flows under Alternative 4 are not specified because of uncertainties regarding the requirements for spring and fall outflows, so a decision tree with four possible outcomes is proposed to guide research. But neither the Plan nor the EIR/EIS describes the research plan for these studies, or the measures that will be used to determine what outflows are necessary, or the contingency plan in case the uncertainties are not resolved by the time construction has been completed. While it is understandable that details remain to be worked out, the EIR/EIS provides no indication of how research will be designed, how restoration sites will be selected within the broadly defined Restoration Opportunity Areas, or how decisions will be made. This makes it difficult to judge the degree to which the approach will be scientifically robust.

15. *Clarity*— Despite a wealth of information and analysis in the EIR/EIS, finding what is needed to understand or evaluate a particular statement or conclusion in the EIR/EIS often involves a considerable amount of searching through thousands of pages, as well as

delving into material in the BDCP Plan. The documents lack structure and, particularly, clear and useful summaries that would highlight the findings and define the outstanding issues. There are frequent cross-references in the text, some of which lead to additional information and some of which do not. The problem is not that the EIR/EIS is difficult to read, for it is surprisingly well written, but it is difficult to find meaning with respect to the decisions to be made.